

Creativity in the Envisioning of a Collaborative Learning Space: first stages in the development of the Carrick Exchange

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Abstract

The development of the Carrick Exchange is a major initiative of the Carrick Institute for Learning and Teaching in Higher Education. This paper reports on the initial stages of development. In particular, imaginary scenarios were used to envision the nature and the scope of the project. This work led to the identification of numerous human and technical issues which need to be addressed for the Carrick Exchange to be sustainable.

Introduction

The Carrick Institute for Learning and Teaching in Higher Education was established in 2005 by the Australian Government as the national focus for promoting learning and teaching in higher education. A key priority is to develop mechanisms for the identification, dissemination and embedding of good individual and institutional practices at a national and international level, and the Carrick Resource Identification and Networking (RIN) portfolio was established with approximately \$A7 million to achieve this aim. The Carrick Exchange is the web-based mechanism through which this will occur.

The original vision was that *"The [Carrick Exchange] will provide a centrally co-ordinated repository service aimed at enhancing the sharing and subsequent adoption of good practice in learning and teaching..." (Parker, 2005).*

An initial meeting with key stakeholders about the services of the Carrick Exchange was held in August 2005. This meeting identified what the Carrick Exchange should not be:

"The discussion brought to light considerable evidence from many sources that repositories in the past tend to have been underutilised resources and that there is much room for new thinking in relation to ways to ensure a satisfactory return on any investment made in repositories or clearinghouses." (Dow, 2005)

and

"a strategy and plan for moving beyond a service that provides 'more of the same' (in terms of existing repositories and clearinghouses) to a genuinely new approach that enables, for example, community-building and extensive cross-referencing and multiple views of items." (Dow, 2005)

These recommendations left fertile ground for the development of a system which could meet its requirements while taking advantage of previous experiences and research into technologically based sharing mechanisms in higher education.

One of the authors was appointed by the Carrick Institute as Director of the RIN Portfolio. She carried out an environmental scan of learning and teaching repository initiatives worldwide, and identified areas of good practice and expertise. She determined that a collaborative approach to development should be undertaken, involving the sector and key national bodies in a co-production. Three bodies were approached to contribute to the development: education.au¹, ascilite² and ACODE³. Education.au was to contribute to the technical aspects of the development; ascilite was to carry out background research into the human aspects relating to the development; and ACODE was to formatively evaluate the Carrick Exchange as it developed.

The first stage of development, from June to September 2006, involved the Carrick Institute engaging with each of these bodies, to establish specific, and shared, goals. Particularly, this involved ascilite in initial research into issues arising from international initiatives, and education.au in scoping out the nature of the Carrick Exchange.

This stage had very tight timelines, because the Carrick Institute wanted to commence engagement with the higher education sector through a national 'think tank' in September 2006. This was a day-long event with approximately 60 representatives with an interest in learning and teaching, only some of whom had an interest in the web component of the project.

Background

Early work on the project identified that many of the technical issues surrounding sharing learning and teaching resources had been investigated over several years and specifications exist (IMS, 2005; SCORM, 2005), and are in a process of evolution into standards. While implementations addressing all of the technical issues are rare, prototypes and demonstrators have shown they are feasible. See, for example, the COLIS (Dalziel, Philip, & Clare, 2005) and eduSource [\[HREF10\]](#) projects.

What has been less thoroughly investigated is the human component of engaging with learning and teaching repositories and their associated user services. A key question underpinning the development of the Carrick Exchange has been: *"How can we provide something which academics would find valuable and want to use?"*.

Ascilite's work on teaching and learning repositories identified a range of issues which needed to be addressed:

- Is the operation of the repository easy to understand, maintain, and use?
- Are the benefits of the repository as an educational tool obvious?
- Is the use of the repository more convenient, more worthwhile?
- Does the repository address the needs of the potential users?
- Is there enough support for the use of the repository?
- Is there enough time, energy, money, and resources to ensure the repository's success?

At the same time, education.au's work tapped into recent advances in Web 2.0 technologies, whose wide uptake in popular culture could be potentially applied to academic activities. These advances, together with acknowledged shortcomings in previous initiatives, provided a solid base on which to design the Carrick Exchange as a set of web services.

The process of this design is the focus of this paper.

Methodology

A design research approach was taken in this work. This is a cyclical approach with four components (Reeves, 2005; Reeves, Herrington, & Oliver, 2005):

1. Analysis of practical problems by researchers and practitioners
2. Development of solutions with a theoretical framework
3. Evaluation and testing of solutions in practice
4. Documentation and reflection to produce design principles

The first round of analysis has been described briefly above. The initial development cycle involved writing imaginary scenarios about how hypothetical users would use the Carrick Exchange⁴. These scenarios were used to develop a static HTML demonstrator, which was used at the 'think tank' in September 2006.

As drafts of the scenarios were developed, they went through internal expert review, and when almost final, were distributed to other project partners for feedback. A further round of validation occurred during the 'think tank'. The scenarios were considered to be appropriate to guide further development of the Carrick Exchange – indeed there was substantial excitement about the possibilities of the Carrick Exchange.

Subsequent cycles of design research will include:

- the development of detailed use cases around the scenarios, which are being validated by the technical development team, the broader project team and through consultation with the sector.

- development of prototypes and associated usability and accessibility testing
- beta testing of the initial release with pilot groups and other interested users.

The Scenarios

The scenarios were developed around the work and interaction of four imaginary characters at the imaginary University of XRin:

- Professor Geoffrey Wain – Carrick Exchange champion, familiar with technology, lecturer, researcher
- Dr Nikos Mantziaris – first year academic and researcher
- Charlene Bosworth – PhD student and part-time tutor
- Associate Professor Mia Chen – Director, Teaching and Learning Unit

Four scenarios were developed based on activities that academics might like to carry out in sharing resources and collaborating on learning and teaching matters:

- contribution and sharing
- social networking
- supporting pedagogy
- searching

A fifth scenario dealt with a national authentication scheme, which is considered as essential for widespread adoption of the Carrick Exchange. The third scenario is illustrated in Fig. 1 as an example.

Fig. 1. An example of the scenarios used in this work; the 'supporting pedagogy' scenario. Note that at the time the scenarios were written the Carrick Exchange was referred to as the RIN.

<p>Green Scenario: Charlene Bosworth, part-time tutor and Professor Geoffrey Wain, course coordinator</p> <p>Charlene Bosworth is a postgraduate student at the University of Xrin. Her research area is teaching and learning, and she is also a tutor in an undergraduate course. She is working in collaboration with the lecturer, Professor Geoffrey Wain who is the course coordinator for the unit she tutors in, to look at how they could deliver lectures in a way which means that Professor Wain doesn't always need to be in the lecture theatre, as he's often away on research trips.</p> <p>Charlene is familiar with RIN. She goes to the site and clicks on the link 'Lecturing' under the 'RINTeach' section.</p> <p>RIN provides a 'Lecturing' home page which brings together a wealth of information about lecturing as a teaching method. This includes discussions about aspects of lecturing in RINDiscuss, recently added resources about lecturing, resources recommended about lecturing (generated from how frequently resources on this topic are added to RIN Members' RINPacks), access to road tests of technologies used in lecture delivery, and peer reviewed resources about lecturing.</p> <p>She clicks on the link to Audio Lectures and RIN provides resources about audio lectures. This includes similar kinds of information to that provided on the general 'Lecturing' page but is specific to audio lecturing. In addition, the page provides fact sheets on areas of knowledge necessary for the delivery of audio lectures and highlights featured projects and research related to the delivery of audio lectures.</p> <p>Charlene is interested in the project 'The impact of web-based lecture technologies on current and future practice in learning and teaching'. She clicks on the link and RIN provides a project page describing the project, providing documents generated by the project and also provides access to the community area and the RINDiscussion that has occurred around the project.</p>

Project Requirements

Development of the scenarios, based on the background research, led to a specification of requirements. The Carrick Exchange will not be a traditional information system, but instead a set of web services, accessed in various ways according to user needs. This concept is illustrated in Figure 2, where various *users* will use various *interfaces* to access various *services* which may source information from various *repositories*.

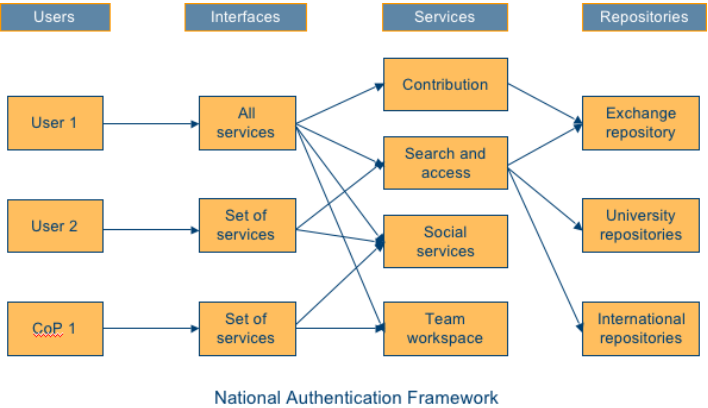
Four generic service types are envisaged: contribution services to share content, search services to find content; social (Web2.0) services to enable collaboration and sharing; and workspace services for teams to work on projects. The Carrick Exchange will be interoperable with other similar services which are 'standards compliant', enabling federated searches of content across a range of repositories.

Fig. 2 displays various ways in which the Carrick Exchange might be used. A generic user will access a 'portal', a single location which provides a 'one-stop shop' to all services. This will be the only available interface in the first release. Another user might access a tailored set of services through their own interface, for example, a university portal. In Fig. 2, this user is only interested in search and social services, and not in contribution nor shared workspaces. The Carrick Exchange will also support Communities of Practice (CoP) and special interest groups. These groups of users may also access a tailored set of services through their own interface. These may be social services or shared workspace services.

Issues

The scenarios and the background research led to the identification of a range of issues impacting on the potential success of the Carrick Exchange. These are discussed briefly below.

Fig. 2. High level conceptual framework of the Carrick Exchange.



National Authentication Framework

The scenarios assume that a logged-in user will be able to experience seamless movement between their university environment and the Carrick Exchange. This is seen as essential for the project's long term success and sustainability. A subproject has been commissioned to explore the issues surrounding authentication and identity management in Australia's higher education sector, and to explore methods and processes for working with the sector to support the development of a national authentication framework.

The aim of working towards a national authentication framework for the Carrick Exchange is to:

- support higher education sector-wide standards for authentication and identity management;
- Enable sharing of resources across university boundaries, but limited by permissions set by individual universities or resource owners;
- Encourage the use of the Carrick Exchange services and thus the support of academics in their teaching and learning activities;
- Reduce barriers for users to move between different online environments.

Current Projects

The Carrick Exchange development needs to build on current projects and existing work, to avoid duplication of effort; to build on the learning that has taken place already; and use this knowledge to leapfrog into a new kind of web service provision.

Nationally, considerable investment has been made in projects that have similarities with aspects of the Carrick Exchange – for example national projects such as edna (repositories, collaboration, search, metadata, interoperability), ARROW (search, repositories, metadata), ASPR (repositories, search), MAMS (authentication) and COLIS (authentication, interoperability, standards, search).

ARROW, MAMS and ASPR are each 'Federated Repositories of Digital Objects'⁵ (FRODO) projects funded through the Australian Government's *Backing Australia's Ability: An Innovative Action Plan for the Future* policy. The follow on projects from FRODO may also be relevant to issues that emerge during the development of the vision for the Carrick Exchange. These are the MERRI (Managed Environments for Research Repository Infrastructure) projects⁶. A number of international projects are also relevant – these include, but are not limited to eduSource⁷, MERLOT⁸, Ariadne⁹, and JORUM¹⁰.

Sector Engagement Strategy

To be successful and sustainable, the Carrick Exchange needs to be embedded in the higher education sector, and be well known and well regarded. A wide-ranging sector engagement strategy is being developed and will be rolled out during 2007. Components include two national 'roadshows'; engagement with four pilot groups who will trial and validate the Carrick Exchange; a plan for engaging with Exchange *Champions* and Exchange *Friends*; and various dissemination strategies.

Human Issues

Various human issues impact on the success of the Carrick Exchange. Issues under investigation include:

- What are the factors affecting human engagement with systems like the Carrick Exchange?
- How can people be encouraged to contribute their work?
- How might they be rewarded?
- How can social networking tools be applied successfully in an academic environment?

Both technical and process issues arise from these questions, and they are discussed below.

Rewards and Recognition

A separate Carrick Institute project has been commissioned to investigate a system of rewards and recognition for university staff who engage in innovation in learning and teaching. This encouragement could take a number of forms, for example:

- DEST awards points to universities for peer reviewed contributions made to the Carrick Exchange by individuals or by institutions;
- Universities consider contributions to the Carrick Exchange as one of the selection criteria in applications for promotion;
- The Carrick Exchange rewards contributors with certificates of contribution, Contributor of the Year awards, discipline based contributor awards, or similar.

Peer Review

An important mechanism for rewards and recognition is the peer review of contributions to the Carrick Exchange. This approach has been common for many years in research, but models are only just emerging for peer review of learning and teaching resources.

In 2000, Griffith University carried out a project 'Validating Scholarship in University Teaching: Constructing a National Scheme for external peer review of ICT-based teaching and learning resources' (Taylor & Richardson, 2001). Subsequent development resulted in the website and peer review service at [\[HREF17\]](#). This and other work will be used to inform our implementation of a peer review scheme.

However, not all information types in the Carrick Exchange will be deserving of peer review. Some information types will be less formal, for example, a page of teaching tips about large class techniques. In this case, it would be more appropriate for people who have used these tips to provide a commentary about how useful they were, and how they were applied in a particular context.

Asclite is conducting an investigation into all aspects of peer review and commentary on learning and teaching resources.

Intellectual Property and Digital Rights

Management of intellectual property will be an important success factor for the Carrick Exchange. The Carrick Exchange is promoting an intellectual property regime that supports sharing and collaboration, but the rights of creators of learning and teaching resources need to be protected. Phillips et al. (2005) report on the behaviour of academics vis a vis digital resources:

However, even with agreed mechanisms for creating searchable learning objects and interoperable repositories, digital rights management becomes an issue. There are broadly two opinions held by academics about intellectual property in general, and digital rights, in particular. Many academics are willing to freely share their intellectual property with others, in a spirit of scholarly sharing of information. Many others, on the other hand, want to protect the effort they have put into developing their teaching materials, and fear that it will be 'stolen', and that their value to their institution will be diminished if other people have access to their intellectual property.

While many academics sharing learning objects would like to be acknowledged, and perhaps recompensed, for their efforts, they are not comfortable with other people modifying their learning resources. It is ironic, however, that many of the same academics cite as reasons for not adopting learning objects created by others the cost, and the inability to modify them to an individual context. (2005: 158)

These human issues need to be addressed in the Carrick Exchange. The emerging Rights Expression Languages enable digital rights to be attached to learning and teaching resources. Depending on the rights specified in a resource, this will enable the original creator of the work to be acknowledged, but will also enable any modifications made by third parties to be acknowledged. An investigation into these issues is being carried out by education.au.

Metadata

The Carrick Exchange will provide an online environment supporting the discovery and exchange of resources by members of the Australian higher education sector. However, for resources to be discoverable, they need to be described in a consistent way through the use of metadata.

Metadata, based on standards such as Dublin Core (2005) and Learning Object Metadata (IEEE, 2002), is a key component in the construction of web-based repositories and e-learning environments. Education.au is carrying out investigations into the use of metadata in the Carrick Exchange, including:

- deciding which metadata schema and elements will be used;
- developing a consistent set of descriptors and associated controlled vocabularies;
- interoperability with relevant higher education sector projects and resources;

- automation of metadata creation.

As well as technical metadata issues, human issues impact on metadata use. Without metadata, it is difficult to locate appropriate resources. However, specification of metadata is a time consuming process requiring specialised skills. Phillips et al. (2005) identified that contextual metadata needs to be entered by the creator of a resource, but technical metadata needs to be entered by an information professional using controlled vocabularies. Specifying and funding metadata creation workflows will be an important challenge for the Carrick Exchange.

Conclusion

This paper has provided an overview of the Carrick Exchange development project, and described the initial stages of development through the use of scenarios. This work has enabled the scope of this complex project to be realised, and identified issues which need further investigation for the Carrick Exchange to be successful. Subprojects have been commissioned to investigate both human and technical issues:

- processes and strategies to encourage engagement with and use of the Carrick Exchange;
- policies, procedures and tools for resource contribution;
- peer review and commentary;
- suitable content for the first release of the Carrick Exchange;
- engagement with the higher education sector;
- rewards and recognition;
- social networking;
- metadata;
- digital rights;
- national authentication.

The presentation of this paper will report on progress on the Carrick Exchange, and seek feedback from the AusWeb community about its functionality and barriers facing its success, with a goal of inviting national involvement in ongoing development.

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Footnotes

- ¹ education.au is a national ICT agency established to develop and manage online educational services and products. [\[HREF7\]](#)
- ² Australasian Society for Computers in Learning in Tertiary Education. [\[HREF8\]](#)
- ³ Australasian Council on Open, Distance and E-learning. [\[HREF9\]](#)
- ⁴ This approach was derived from work by Helena Zobec and Deb Venness at the University of Canberra in a tender process for selecting a university Learning Resource Management System.
- ⁵ Australian Government Department of Education, Science and Training, 2003 Federated Repositories of Digital Objects (FRODO) Projects, Reference: [\[HREF11\]](#) Accessed 22 August 2006.
- ⁶ Australian Government Department of Education, Science and Training, Result of the recent Call for Proposals for funding from the Strategic Infrastructure Initiative Information Infrastructure for Australian Higher Education, Reference: [\[HREF12\]](#) Accessed 22 August 2006.
- ⁷ eduSource – Canadian Network of Learning Object Repositories, Reference: [\[HREF13\]](#) Accessed 22 August 2006.
- ⁸ MERLOT, Multimedia Educational Resource for Learning and Online Teaching, Reference: [\[HREF14\]](#) Accessed 22 August 2006.
- ⁹ Ariadne, Reference: [\[HREF15\]](#) Accessed 22 August 2006.
- ¹⁰ JORUM, Reference: [\[HREF16\]](#) Accessed 22 August 2006.

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- HREF2
<http://www.tlc.murdoch.edu.au/>
- HREF3

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HREF5 <http://www.murdoch.edu.au>
HREF5 <http://www.carrickinstitute.edu.au>
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HREF23 http://www.dest.gov.au/archive/highered/eippubs/eip01_3/01_3.pdf

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